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E. Joseph Gess, Esq.  
BURNS, DOANE, SWECKER & MATHIS, L.L.P.  
P.O. BOX 1404  
Alexandria, VA 22313-1404

EXAMINER

PHAN, THIEM D

ART UNIT

PAPER NUMBER

3729

DATE MAILED: 01/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/698,817

Applicant(s)

THERIAULT ET AL.

Examiner

Tim Phan

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— The MAILING DATE of this communication appears on the cover sheet with the correspondence address —

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 November 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

1. The amendment filed in Paper No. 7 (filed 11/22/02) has been fully considered and made of record.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 1-5, 19 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Ochoa et al (USPN 6,054,682).

**With respect to claims 1, 19, 20,** Ochoa et al disclose a system for reducing water vapor in integrated circuit packaging on printed circuit board, the system comprises:

- a component storage area (Cf. fig. 4, element 101; column 4, lines 35-36) which is a thermal chamber heated up for dryness or water vapor removal (Cf. column 4, line 23),
- a component placement system for taking components from component storage area and placing them on printed circuit boards or pick and place machine (Cf. column 4, line 34),
- an enclosure surrounding the component storage area where the components chamber must be enclosed in order to be heated up (Cf. fig. 4, element 111; column 4, line 33, lines 35-36),
- a dry gas delivery system to storage area to maintain a dry atmosphere and to prevent moisture from being absorbed by the components, that utilizes heating, vacuuming and inserting inert gas in the components chamber to get rid of the water vapor (Cf. column 4, lines 61-66), including deionized air (Cf. column 9, line 1, lines 7-8).

**With respect to claims 2-5,** Ochoa et al disclose the components fed to PCB placement machine in parts trays, parts in a tape or reel and loose parts in a tube or sticks (Cf. column 1, lines 19-20), specially with the bulk storage of reels to optimize manufacturing (Cf. fig. 4, element 101; column 6, lines 44-48).

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4. Claims 9-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Ochoa et al.

**With respect to claim 9**, Ochoa et al disclose a method for reducing water vapor in integrated circuit packaging on printed circuit board, comprising:

- storing electronic components in storage area (Cf. fig. 4, element 111; column 4, lines 35-36) which is a thermal chamber heated up for dryness or water vapor removal (Cf. column 4, line 23), next to a surface mount device placement machine or “pick and place machine” for the SMT or reflow soldering (Cf. column 2, lines 4-5),
- maintaining dry atmosphere in storage area and injecting dry gas through heating , vacuuming and inserting inert gas in the components chamber (Cf. column 4, lines 61-66), including deionized air (Cf. column 9, line 1, lines 7-8),
- removing components from storage area (Cf. fig. 3, element 101),
- mounting the components on printed circuit board (Cf. column 6, lines 24-25).

**With respect to claims 10-13**, Ochoa et al disclose the components fed to PCB placement machine in parts trays, parts in a tape or reel and loose parts in a tube or sticks (Cf. column 1, lines 19-20), specially with the bulk storage of reels to optimize manufacturing (Cf. fig. 4, element 101; column 6, lines 44-48).

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*Claim Rejections - 35 USC § 103*

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 6 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ochoa et al in view of Vander Velde (USPN 5,365,779).

Ochoa et al disclose a system for reducing water vapor in integrated circuit packaging, which meets all of applicant's claimed limitations except for teaching the controlled dry gas delivery system with a moisture sensor.

However, Vander Velde teaches a system (Cf. fig. 1; column 5, lines 9-32) that supplies non-corrosive dry gas without heat (Cf. fig. 1, element 24; column 8, lines 32-37) to the inlet port (Cf. fig. 1, element 20) of a prestressing element (Cf. fig. 1, element 16) lay inside and along the concrete structure (Cf. fig. 1, element 14), samples at the outlet (Cf. fig. 1, element 26) of that conduit the humidity level with a moisture sensor (Cf. fig. 1, element 30) and uses the feedback to control the flow rate of dry gas in order to evaluate the humidity level or corrosion of that concrete structure and dry it out through continuous non-corrosive dry gas flow (Cf. column 4, lines 12-15).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ochoa et al's method by applying the references of drying out the moisture from an enclosed area rather than the bodily structure as taught by Vander Velde in order to facilitate and improve the treatment of moisture problem in the component packaging without heating then avoiding any "popcorn effect" (Ochoa et al, column 4, line 1).

7. Claims 7, 8 and 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ochoa et al in view of Vander Velde.

Ochoa et al disclose a system for reducing water vapor in integrated circuit packaging, which meets all of applicant's claimed limitations except for delivering dry flow gas at different rate to the storage area.

However, Vander Velde discloses that the flow rate and pressure of dry non-corrosive gas without heat is controlled by a regulator (Cf. fig. 1, element 32; column 5, lines 21-22) to monitor the flow rate and the humidity level sensor (Cf. fig. 1, element 30), thus an unobstructed flow or first flow of dry gas through the open components chamber is always higher than a blocked one or second flow of dry gas through a closed chamber to the component storage area.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ochoa et al's method by applying the references of drying out at different flow rate the moisture from an enclosed area by a regulator rather than the bodily structure as taught by Vander Velde in order to efficiently dry out the storage component chamber without

exerting too much pressure and wasting energy on the gas dry blower, only by slowing down the dry air flow rate when the airflow is obstructed.

8. Claims 14-17 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ochoa et al in view of Vander Velde.

**With respect to claims 14, 15 and 30**, Ochoa et al disclose a system for reducing water vapor in integrated circuit packaging, which meets all of applicant's claimed limitations except for teaching the controlled dry gas delivery system with a moisture sensor.

However, Vander Velde teaches a system (Cf. figure 1, column 5, lines 9-32) that supplies non-corrosive dry gas (Cf. fig. 1, element 24) without heat to the inlet port (Cf. fig. 1, element 20) of a prestressing element (Cf. fig. 1, element 16) lay inside and along the concrete structure (Cf. fig. 1, element 14), samples at the outlet (Cf. fig. 1, element 26) of that conduit the humidity level with a moisture sensor (Cf. fig. 1, element 30).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ochoa et al's method by applying the references of drying out the moisture from an enclosed area rather than the bodily structure as taught by Vander Velde in order to facilitate and improve the treatment of moisture problem in the component packaging without heating it up and avoiding any "popcorn effect" (Cf. Ochoa et al, column 4, line 1).

**With respect to claims 16-17**, Vander Velde discloses that the flow rate and pressure of dry non-corrosive gas is controlled by a regulator (Cf. column 5, lines 21-22) to monitor the flow



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rate, thus an unobstructed flow or first flow of dry gas through the open components chamber is always higher than a blocked one or second flow of dry gas through a closed chamber.

9. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ochoa et al in view of Alles et al (USPN 5,297,438).

Ochoa et al disclose a system for reducing water vapor in integrated circuit packaging, which meets all of applicant's claimed limitations except for drying out or removing about 0.1% or more the moisture from the components weight.

However, Alles et al teaches the drying effect of less than 1% moisture of the filter cake passing through the heated oven (Cf. column 8, line 62) in the making of the piezoresistive sensor.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ochoa et al's method by applying the reference/ specification of drying out the moisture from a material in an enclosed area as taught by Alles et al in order lower the humidity from the component then avoiding the "popcorn effect" during reflow soldering.

10. Claims 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ochoa et al in view of Vander Velde.

**With respect to claim 21 and 24**, Ochoa et al disclose a system for reducing water vapor in integrated circuit packaging, which meets all of applicant's claimed limitations except for delivering dry flow gas at different rate to the storage area by a regulator.

However, Vander Velde discloses the flow rate and pressure of dry non-corrosive gas without heat to be controlled by a regulator (Cf. column 5, lines 21-22) in order to monitor an optimized flow rate.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ochoa et al's method by applying the references of drying out at different flow rate the moisture from an enclosed area by a regulator rather than the bodily structure as taught by Vander Velde in order to efficiently dry out the storage component chamber without heating it up or exerting too much pressure and wasting energy on the gas dry blower by slowing down the dry air flow rate when the air flow is obstructed.

**With respect to claims 22 and 23,** Ochoa et al and Vander Velde disclose the claimed invention of drying the components chamber without heat except for adding several inlets with sprayer for dry airflow in the chamber. It would have been a mere matter of design choice to add several dry gas inlets to the components chamber and it appears that the invention would perform equally well with single large dry gas inlet with continuous feedback control, sensor for humidity and dry gas flow regulator for monitoring the vapor level in the components chamber.

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*Response to Arguments*

11. Applicant's arguments with respect to claims 1-30 have been considered but are moot in view of the new ground(s) of rejection.

*Conclusion*

12. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tim Phan whose telephone number is 703-605-0707. The examiner can normally be reached on Monday - Friday, 9AM - 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter VO can be reached on 703-308-1789. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9302 for regular communications and 703-872-9303 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1148.

*T. P.*

Tim Phan  
Examiner  
Art Unit 3729

*ja*  
CARL J. ARBES  
PRIMARY EXAMINER

tp  
January 28, 2003